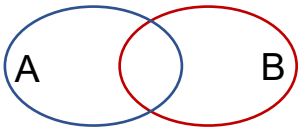
Math 6c, homework 3.

1. $A = \{1, 2, 5, 10, 15, 20\}$
   $B = \{2, 5, 10, 25, 45, 70\}$
   Write the sets $C = A \cup B$ and $D = A \cap B$

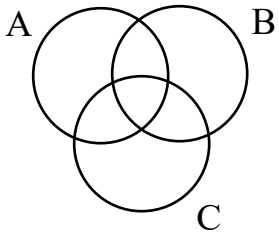
2. $A = \{1, 2, 5, 10, 15, 20\}$
   $B = \{2, 5, 10, 20, 25, 45, 70\}$
   $C = \{2, 5, 15, 20, 25, 65, 75\}$

   Write the sets $M = A \cap B \cap C$, $N = (A \cap B) \cup C$

3. On the diagrams of sets A, and B put 4 elements so that (just draw 4 points, or put any four letters).
   a. each set contains 3 elements
   b. set A contains 2 elements, set B contains 4,
   c. set A contains 4 elements, sets B contains 3 elements,
   d. set A contains 0 elements, set B contains 4 elements,
   e. each set contains 2 elements,
   f. each set contains 4 elements.



4. Draw Venn diagram for sets A, B, and C as on the picture. Shade the following areas;
   a. $A \cap B$;
   b. $A \cap C$;
   c. $A \cup B$;
   d. $A \cup C$;
   e. $(A \cap B) \cup C$;
   f. $A(\cup) \cap C$;
   g. $(A \cap C) \cup (B \cap C)$



5. Set A $= \{2, 5, 6, 8, 12, 19, 24, 32, 45, 47\}$.
   Write subsets of the set A
   a. of prime numbers
   b. of composite numbers
   c. divisors of 24
   d. not multiples of 2
   e. multiples of 3 and 5
   f. multiples of 3 or multiples of 5
   g. divisors of 8 or divisors of 12
   h. divisors of 8 and 12.

6. Students who participated in math competition had to solve 2 problems, one in algebra and another in geometry. Among 100 students 65 solved algebra problem, 45 solved geometry problem, 20 students solved both problems. How many students didn't solve any problem at all?

7. Evaluate (answer is 5):

$$(2.5-0.75)\cdot\frac{4}{7}+\left(\left(3\frac{3}{8}-2\frac{11}{12}\right)\cdot 1\frac{7}{9}+2\frac{11}{12}\cdot 1\frac{7}{9}\right):\left(3.5:2\frac{1}{3}\right)$$

8. x is a natural number.
   a. Among following statements 3 are true and 2 are false.
   b. $2\cdot x$ is greater than 70
   c. x is less than 100
   d. $3\cdot x$ is greater than 25
   e. x is not less than 10
   f. x is greater than 5

   What is x ?